UK NEQAS
Leucocyte Immunophenotyping

Sheffield Teaching Hospitals NHS
NHS Foundation Trust

Leukaemia Diagnosis Interpretation
All Participants

Participant: 42981 **Trial No: 141505**

Date Issued: 11-May-2015 **Closing Date: 29-May-2015**

Trial Comments

This was an electronic only trial issued to a total of 733 participants

Your Diagnosis: No Diagnosis

Consensus Diagnosis: Chronic lymphocytic leukaemia/small lymphocytic lymphoma

Your Diagnosis is classed as a **NON RETURN** result

Performance Score: 50

Running Score: 50

Consensus

	Consensus Diagnosis	Your Diagnosis
Lineage	Lymphoid-B cell	No Diagnosis
Subclassification	Mature (peripheral) B-cell neoplasms	No Diagnosis
Diagnosis	Chronic lymphocytic leukaemia/small lymphocytic lymphoma	No Diagnosis

Breakdown of returned diagnoses

Diagnosis	No Of Returns	Percentage Of Returns
Total Returns	267	100.0
Chronic lymphocytic leukaemia/small lymphocytic lymphoma	265	99.3
B-cell prolymphocytic leukaemia	1	0.4
Splenic B-cell lymphoma/leukaemia, unclassified	1	0.4

Sheffield Teaching Hospitals NHS Foundation Trust, a UKAS proficiency testing provider No. 7804, operating UK NEQAS for Leucocyte Immunophenotyping.

Copyright Sheffield Teaching Hospitals NHS Foundation Trust 2015© Not to be reproduced in all or part without permission of STH or UK NEQAS LI

Leukaemia Diagnostic Interpretation trial 141505

Case History

An 89 year old female was admitted to hospital with a chest infection.

Haematological examination subsequently revealed the following:

Hb- 92 g/L; WBC- 147.83 x10^9/L; PLT- 21 x10^9/L; RBC- 2.98x10^12/L; HCT- 0.299 L/L; MCV- 100.3 fL; MCH- 30.9 pg

Immunophenotype

The consensus results of the malignant cells from the corresponding LI 141505 Leukaemia Immunophenotyping trial had the following phenotype (consensus percentage expression in brackets):

Positive Antigens - CD5 (93.92%), CD5/CD19 (87.51%), CD11c (35.79%), CD19 (95.26%), CD20 (46.88%), CD23 (59.82%), CD38 (88.73%), CD43 (96.27%), CD45 (100%), CD200 (86.88%), HLADR (81.68%)

Negative Antigens - CD2 (1.45%), CD3 (1.49%), CD10 (0%), CD13 (0.01%), CD22 (19.99%), CD25 (0%), CD34 (0%) CD79b (4.51%), CD103 (0%) FMC7 (0.97%)

Cytogenetics and Molecular genetics

FISH analysis of 100 interphase nuclei showed evidence of *TP53* deletion

Sheffield Teaching Hospitals NHS Foundation Trust, a UKAS proficiency testing provider No. 7804, operating UK NEQA for Leucocyte Immunophenotyping

Copyright Sheffield Teaching NHS Foundation Trust 2015 © Not to be reproduced in all or part without permission of STH or UK NEQAS LI

Peripheral Blood Morphology

Morphology comments from Professor Wendy Erber
Consultant Haematologist, University of Western Australia, Nedlands, Australia

COMMENT:

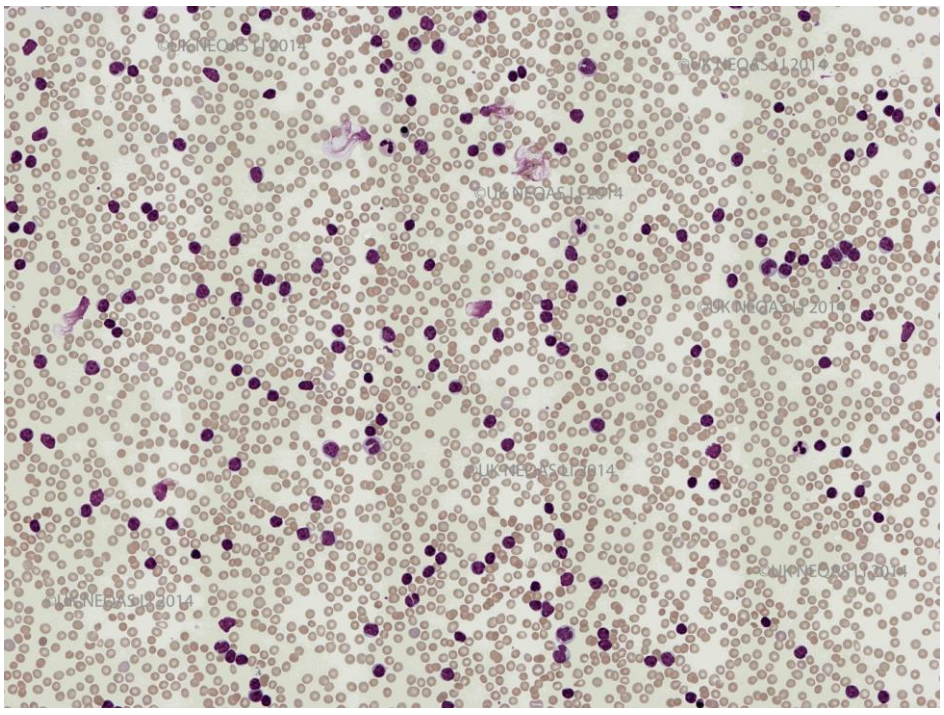
The blood film shows a marked lymphocytosis. The majority of lymphoid cells are small with minimal basophilic cytoplasm, a high nuclear: cytoplasmic ratio and coarsely clumped nuclear chromatin. Approximately 35% of cells are larger with greater amounts of cytoplasm and the nuclei have less mature chromatin and a single nucleolus. Some of the larger cells have irregular nuclear outlines, including clefts. Smear cells are prominent.

There is neutropenia and thrombocytopenia. Anaemia is noted but the red cell morphology appears normal.

The blood film shows features of chronic lymphocytic leukaemia with increased prolymphocytes (35%).

Examples of Digital Images Issued

Figure 1: Peripheral Blood x50 magnification (May Grünwald Giesma stain)



Sheffield Teaching Hospitals NHS Foundation Trust, a UKAS proficiency testing provider No. 7804, operating UK NEQA for Leucocyte Immunophenotyping

Copyright Sheffield Teaching NHS Foundation Trust 2015 © Not to be reproduced in all or part without permission of STH or UK NEQAS LI

Exercise Conclusion / Case Discussion

Please note that, because this trial requires a diagnosis based on the WHO guidelines, this report is therefore based on the WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues. 4th Edition[2].

Leukaemia Immunophenotyping - Part one

Whilst there appeared to be a mild fluorochrome effect on CD79b and CD3, these were unlikely to affect the classification of the case as positive or negative for these antigens. However, the fluorochrome effect with regards to CD20 FITC showed significant variation from other fluorochromes and could have caused a misclassification of positive/negative expression for this antigen.

Leukaemia Diagnostic Interpretation - Part Two

EXERCISE CONSENSUS DIAGNOSIS (Classified as Correct)

Chronic lymphocytic leukaemia/small lymphocytic lymphoma

Other Differential Diagnoses (Classified as Major Errors):

B-cell prolymphocytic leukaemia
Splenic B-cell lymphoma/leukaemia, unclassified

Other Differential Diagnoses (Classified as Minor Errors):

None for this trial

The classification of major and minor errors is currently under review and will be discussed with our steering committee in the near future.

Rationale for Correct Classification

Only 2 responses (both individuals) suggested this was either B Prolymphocytic Leukaemia or a Splenic B-cell Lymphoma/leukaemia, unclassified. All the pathology features were compatible with CLL and were thus correctly classified by 100% of all laboratories that returned results and 97.4% of individuals. As a reminder, for a case to be classified as B-PLL the prolymphocytes in the peripheral blood MUST exceed 55% also CD5 and CD23 are only positive in 20-30% of cases. Equally, for a case to be classified as Splenic B-cell lymphoma/leukaemia, unclassified, CLL, B-PLL, hairy cell leukaemia (HCL) and lymphoplasmacytoid lymphoma (LPL) must be excluded before considering this classification. Such cases are invariably CD5 and CD23 negative and would obviously have splenic involvement.

Sheffield Teaching Hospitals NHS Foundation Trust, a UKAS proficiency testing provider No. 7804, operating UK NEQA for Leucocyte Immunophenotyping

Copyright Sheffield Teaching NHS Foundation Trust 2015 © Not to be reproduced in all or part without permission of STH or UK NEQAS LI

Further Trial Findings

Table 1: Submissions from all participants - laboratories and individuals.

Diagnosis	Total No. of Returns	No. of Laboratories	No. of Individual
Chronic lymphocytic leukaemia/small lymphocytic lymphoma	265	191	74
B-cell prolymphocytic leukaemia	1	0	1
Splenic B-cell lymphoma/leukaemia, unclassified	1	0	1

Table 2: Submissions from laboratory participants only

Diagnosis	Laboratory Returns %
Chronic lymphocytic leukaemia/small lymphocytic lymphoma	100

Table 3: Submissions from individual participants only

Diagnosis	Individual Returns %
Chronic lymphocytic leukaemia/small lymphocytic lymphoma	97.4
B-cell prolymphocytic leukaemia	1.3
Splenic B-cell lymphoma/leukaemia, unclassified	1.3

Sheffield Teaching Hospitals NHS Foundation Trust, a UKAS proficiency testing provider No. 7804, operating UK NEQA for Leucocyte Immunophenotyping

Copyright Sheffield Teaching NHS Foundation Trust 2015 © Not to be reproduced in all or part without permission of STH or UK NEQAS LI

References:

1. Steven H. Swerdlow, Elias Campo, Nancy Lee Harris, Elaine S Jaffe, Stefano A. Pileri, Harald Stein, Jürgen Thiele, James W. Vardiman. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues. 4th Edition. IARC Press 2008

Sheffield Teaching Hospitals NHS Foundation Trust, a UKAS proficiency testing provider No. 7804, operating UK NEQA for Leucocyte Immunophenotyping

Copyright Sheffield Teaching NHS Foundation Trust 2015 © Not to be reproduced in all or part without permission of STH or UK NEQAS LI

Information with respect to compliance with standards BS EN ISO/IEC 17043:2010

4.8.2 a) The proficiency testing provider for this programme is:
UK NEQAS for Leucocyte Immunophenotyping
Pegasus House, 4th Floor Suite
463A Glossop Road
Sheffield, S10 2QD
United Kingdom
Tel: +44 (0) 114 267 3600, Fax: +44 (0) 114 267 3601
e-mail: admin@ukneqasli.co.uk

4.8.2 b) The coordinators of UK NEQAS LI programmes are Prof. David Barnett and Mr Liam Whitby.

4.8.2 c) Person(s) authorizing this report:
Prof. David Barnett, Director or Mr Liam Whitby, Operations Manager of UK NEQAS LI

4.8.2 d) No activities in relation to this EQA exercise were subcontracted.

4.8.2 g) The UK NEQAS LI Confidentiality Policy can be found in the Quality Manual which is available by contacting the UK NEQAS LI office. Participant details, their results and their performance data remain confidential unless revealed to the relevant NQAAP when a UK participant is identified as having performance issues.

4.8.2 i) All EQA samples are prepared in accordance with strict Standard Operational Procedures by trained personnel proven to ensure homogeneity and stability. Where appropriate/possible EQA samples are tested prior to issue. Where the sample(s) issued is stabilised blood or platelets, pre and post stability testing will have proved sample suitability prior to issue.

4.8.2 l), n), o), r) & s) Please refer to the UK NEQAS LI website at www.ukneqasli.co.uk for detailed information on each programme including the scoring systems applied to assess performance. Where a scoring system refers to the 'consensus result' this means the result reported by the majority of participants for that trial issue. Advice on the interpretation of statistical analyses and the criteria on which performance is measured is also given. Please note that where different methods/procedures are used by different groups of participants these may be displayed within your report, but the same scoring system is applied to all participants irrespective of method/procedure used.

4.8.2 m) We do not assign values against reference materials or calibrants.

4.8.2 q) Details of the programme designs as authorized by The Steering Committee and Specialist Advisory Group can be found on our website at www.ukneqasli.co.uk. The proposed trial issue schedule for each programme is also available.

4.8.2 t) If you would like to discuss the outcomes of this trial issue, please contact UK NEQAS LI using the contact details provided.

Sheffield Teaching Hospitals NHS Foundation Trust, a UKAS proficiency testing provider No. 7804, operating UK NEQA for Leucocyte Immunophenotyping

Copyright Sheffield Teaching NHS Foundation Trust 2015 © Not to be reproduced in all or part without permission of STH or UK NEQAS LI